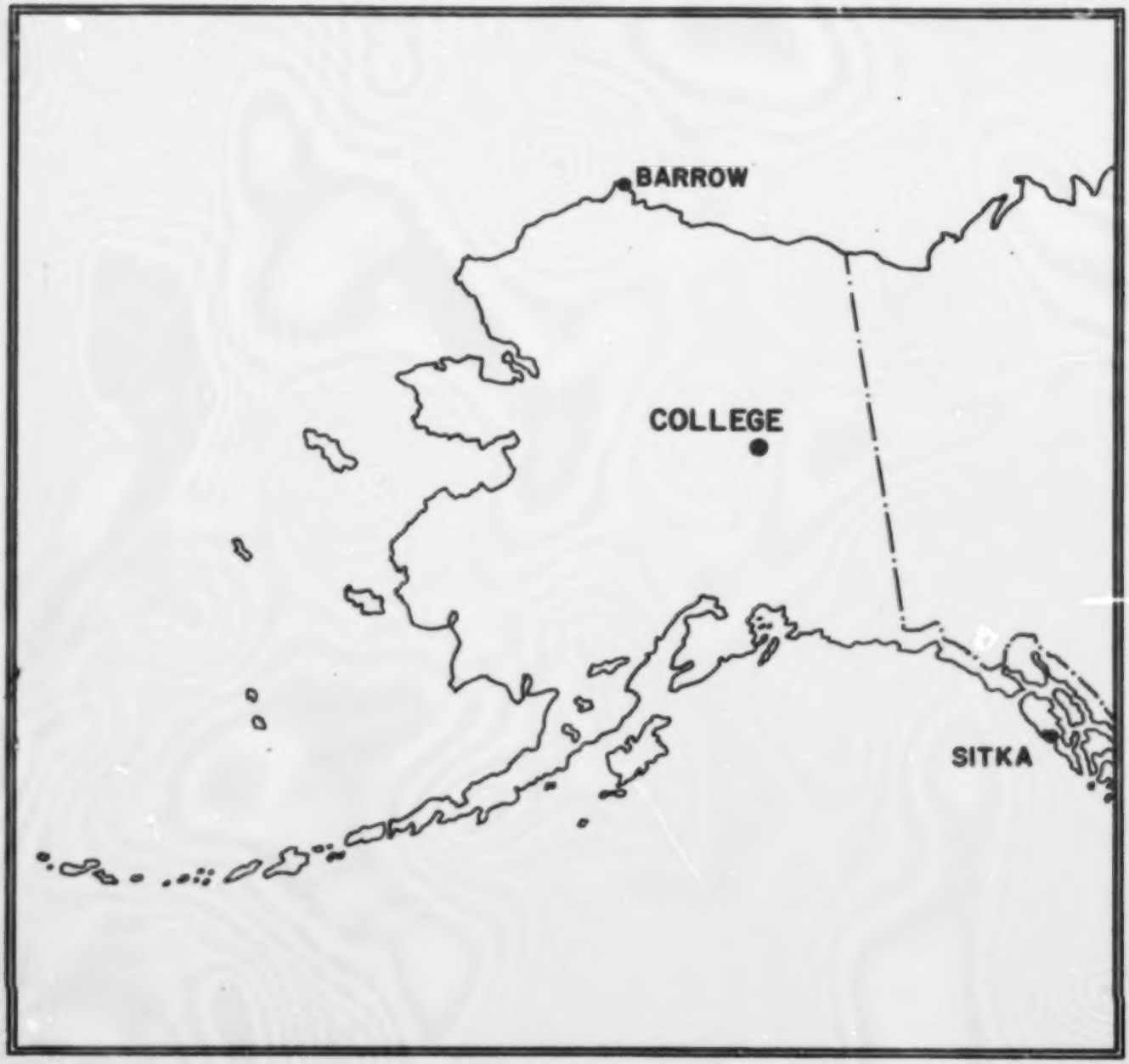
UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

PRELIMINARY GEOMAGNETIC DATA
COLLEGE OBSERVATORY
FAIRBANKS, ALASKA

JULY 1985

OPEN FILE REPORT 85-0300G



THIS REPORT WAS PREPARED UNDER THE DIRECTION OF JOHN B. TOWNSHEND, CHIEF OF THE COLLEGE OBSERVATORY, WITH THE ASSISTANCE OF THE OBSERVATORY STAFF MEMBERS: J.E. PAPP, E.A. SAUTER, L.Y. TORRENCE, P.A. FRANKLIN AND IN COOPERATION WITH THE GEOPHYSICAL INSTITUTE OF THE UNIVERSITY OF ALASKA. THE COLLEGE OBSERVATORY IS A PART OF THE BRANCH OF GLOBAL SEISMOLOGY AND GEOMAGNETISM OF THE U.S. GEOLOGICAL SURVEY.

Explanation of Data and Reports

Magnetic Activity Report

Outstanding Magnetic Effects

Principal Magnetic Storms

Preliminary Calibration Data and Monthly Mean Absolute Values

Magnetogram Hourly Scalings

Sample Format for Normal and Storm Magnetograms

Normal Magnetograms

Storm Magnetograms (When Normal is too disturbed to read)

COLLEGE OBSERVATORY PRELIMINARY GEOMAGNETIC DATA

EXPLANATION OF DATA AND REPORTS

INTRODUCTION

The preliminary geomagnetic data included here is made available to scientific personnel and organizations as part of a cooperative effort and on a data exchange basis because of the early need by some users. To avoid delay, all of the data is copied from original forms processed at the observatory; therefore it should be regarded as preliminary. Inquiries about this report or about the College Observatory should be addressed to:

Chief, College Observatory
U.S. Geological Survey
800 Yukon Drive
Fairbanks, Alaska 99701

Requests for copies of the magnetograms except for the current month should be addressed to:

World Data Center A
NOAA D63, 325 Broadway
Boulder, Colorado 80303

OBSERVATORY LOCATION

The College Observatory, operated by the U.S. Geological Survey, is located at the University of Alaska, Fairbanks, Alaska. It is near the Auroral Zone and the northern limit of the world's greatest earthquake belt, the circum-Pacific Seismic belt. Although the observatory's basic operation is in geomagnetism and seismology, it cooperates with other scientists and organizations in areas where the facility and personnel can be of service.

The observatory is one of three operated by the USGS in Alaska. The others are located at Barrow and Sitka.

The position of the observatory site is:

Geographic latitude.....64° 51.6'N
Geographic longitude.....147° 50.2'W
Geomagnetic latitude.....+64.6°
Geomagnetic longitude.....+256.5°
Elevation.....200 meters

GEOMAGNETIC DATA

Normal, Storm and Rapid Run magnetograms and appropriate calibration data are processed daily at the observatory and are available for analysis or copying. Also available, are mean hourly scalings, K-Indices, selected magnetic phenomena reports and on a real-time basis are recordings from a 3-component fluxgate magnetometer and F-component proton magnetometer.

Magnetic Activity

The K-Index: The K-Index is a logarithmic measurement of the range of the most disturbed component (D or H) of the geomagnetic field for eight intervals beginning 0000-0300, 0300-0600...2100-2400 UT. It is a measure of the difference between the highest and lowest deviation from a smooth curve to be expected for a component on a magnetically quiet day, within a three hour interval.

The Equivalent Daily Amplitude, AK: The K-Index is converted into an equivalent range, ak, which is near the center of the limiting gamma ranges for a given K. The average of the eight values is called equivalent daily amplitude AK. The unit 10γ has been chosen so as not to give the illusion of an accuracy not justified.

The schedule for converting gamma range to K, and K to ak is as follows:

Gamma Range	K - Index	ak
0 < 25	0	0
25 < 50	1	3
50 < 100	2	7
100 < 200	3	15
200 < 350	4	27
350 < 600	5	48
600 < 1000	6	80
1000 < 1650	7	140
1650 < 2500	8	240
2500+	9	400 (10γ)

The Magnetic Daily Character Figure, C: To each Universal day a character is assigned on the basis C=0, if it is quiet; C=1, if it is moderately disturbed; C=2, if it is greatly disturbed. The method used to assign characters at the College Observatory is based on AK as follows:

AK Range	C
0-11	0
11-50	1
50+	2

Routine assignment of C was discontinued at College on January 1, 1976.

Selected Phenomena & Outstanding Magnetic Effects

Prior to January 1, 1976, the Normal and Rapid Run records were reviewed at the observatory for selected magnetic phenomena and the events identified were forwarded to the IUGG Commission on Magnetic Variations and Disturbances. This was discontinued on January 1, 1976, but a report on Outstanding Magnetic Effects is prepared monthly for this report.

Principal Magnetic Storms

Gradual and sudden commencement magnetic disturbances with at least one K-Index of 5 or greater, which are believed to be part of a world-wide disturbance, are classified as principal magnetic storms. The time of the storm beginning and ending; direction and amplitude of sudden commencements; period of maximum activity; and storm range are reported. Monthly reports of these data are forwarded to the World Data Center A in Boulder, Colorado.

Magnetogram Hourly Scalings

Magnetogram hourly scalings are averages for successive periods of one hour for the D, H and Z elements. The Value in the column headed "01" is the average for the hour beginning 0000 and ending 0100. Note that the values on the scaling sheets are in tenths of mm with the decimal point omitted. The user of these scalings should keep in mind that the tabular values are hourly means and if he is interested in the detailed morphology of the magnetic field, he should refer directly to the magnetograms.

Magnetograms

The normal magnetograms in this report are reproduced at about one-third the size of the originals. Preliminary base-line values and scale values adopted for use with the original magnetograms are included. For days when the magnetic field is too disturbed for the Normal magnetogram to be readable, Storm magnetograms are reproduced.

Absolutes, Base-lines and Scale Values

To determine the absolute value of the magnetic field from the hourly means or from point scalings the following equations should be used:

$D=B_D+d\cdot S_D$; $H=B_H+h\cdot S_H$; $Z=B_Z+z\cdot S_Z$

where D, H and Z are absolute values;
B_D, B_H and B_Z are base-line values;
S_D, S_H and S_Z are scale values;
and d, h and z are scalings in millimeters.

NOAA FORM 76-133 (9-72)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MAGNETIC ACTIVITY

(Greenwich civil time, counted from midnight to midnight)

OBSERVATORY: COLLEGE, ALASKA

MONTH AND YEAR: JULY 1985

DATE	K-INDICES 00-03	03-06	06-09	09-12	12-15	15-18	18-21	21-24	SUM	AK
1	4	3	4	2	3	3	1	2	22	15
2	2	1	1	0	0	0	0	1	05	02
3	2	2	2	1	3	1	1	2	14	07
4	3	2	3	3	7	5	3	3	29	34
5	4	4	3	5	5	3	3	3	30	26
6	3	3	3	6	4	4	2	3	28	25
7	4	5	6	5	5	5	2	2	34	39
8	2	3	3	3	4	4	4	3	26	19
9	3	4	4	0	2	2	1	0	16	11
10	2	1	1	1	1	1	2	2	11	05
11	2	2	2	3	3	2	2	1	17	09
12	5	5	5	7	5	6	6	2	41	62
13	2	2	2	6	5	5	5	3	30	33
14	3	4	7	4	4	3	2	2	29	33
15	2	5	3	5	2	1	1	1	20	17
16	1	1	2	1	1	2	2	2	12	05
17	2	3	2	6	6	6	2	2	29	35
18	3	3	3	4	6	3	3	3	28	25
19	2	2	2	4	4	3	1	0	18	12
20	1	2	4	3	4	5	2	2	23	18
21	2	2	3	3	1	0	1	1	13	07
22	1	1	3	3	3	0	1	1	13	07
23	1	4	4	4	3	1	1	2	20	14
24	2	2	3	6	5	3	2	2	25	23
25	3	3	4	4	0	2	3	1	20	14
26	1	4	3	4	2	2	2	3	21	14
27	3	4	5	5	5	2	1	1	26	25
28	2	3	1	5	2	2	2	2	19	13
29	2	1	0	0	1	1	2	1	08	03
30	2	4	3	3	6	3	1	1	23	21
31	1	3	6	7	6	7	3	3	36	61

TIME SCALE ON MAGNETOGRAMS: 20 mm/hr

SUDDEN COMMENCEMENTS

d	h	m

POSSIBLE SOLAR-FLARE EFFECTS BASED ON INSPECTION OF GRAMS ALONE (WITHOUT REFERENCE TO DATA FROM OTHER SOURCES)

BEGIN d	BEGIN h	BEGIN m	END d	END h	END m

K SCALE USED:	D	H	Z	
LOWER LIMIT FOR K = 9.....	675.7	322.2		(mm)
CURRENT SCALE VALUE.....	3.72	7.80		(γ/mm)
LOWER LIMIT FOR K = 9	2510	2510		(to nearest 10γ)

SCALINGS AND COMPUTATIONS HAVE BEEN CHECKED.

APPROVED JOHN E. PAPP, ASSISTANT CHIEF
OBSERVER IN CHARGE

NOAA FORM 76-133 SUPERSEDES C&GS FORM 818

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-887

OUTSTANDING MAGNETIC EFFECTS

OBSERVATORY	
COLLEGE, ALASKA	
MONTH	YEAR
JULY	1985

DATE	TIME U.T.	NATURE OF PHENOMENON[1]	REMARKS
03	12xx	pi 2	With bay
11	15xx	pg	

IDENTIFIED BY: JEP	VERIFIED BY: EAS

1. NATURE OF PHENOMENON: ssc, ssc*, si, si*, b, bp, bs, bps, pc1, pc2 - - - pc5, pg, pi 1, pi 2, sfe.

NOAA FORM 86-500
(11/73)

PRINCIPAL MAGNETIC STORMS

WDC-A FOR SOLAR-TERRESTRIAL PHYSICS
ENVIRONMENTAL DATA SERVICE, NOAA
BOULDER, COLORADO 80302 U.S.A.

Data from Individual Observatories: COLLEGE OBSERVATORY, COLLEGE, ALASKA

JULY 1985

Obs. 2 letter IAGA code	Geomag. lat.	Commencement			SC - amplitudes			Max. 3 hr - index K			Ranges			UT End	
		day	hr min (UT)	type	D(')	H(γ)	Z(γ)	day	(3 hr - period)	K	D(')	H(γ)	Z(γ)	day	hr
CO	64.°6 N	04	12xx	..	..	..	..	04	5	7	237	1350	970	07	24
		11	18xx	..	..	..	..	12	4	7	190	1620	900	12	22
		13	08xx	..	..	..	..	14	3	7	136	1330	410	14	22
		31	03xx	..	..	..	..	31	4, 6	7	254	1280	1130	Aug. 01	07

COLLEGE OBSERVATORY, COLLEGE, ALASKA -- PRELIMINARY CALIBRATION DATA FOR: JULY 1965

NORMAL MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 7-1-65	2400 U.T., 7-31-65	1.0'/mm	3.7 γ/mm	27° 15.6' E
H	0000 U.T., 7-1-65	2400 U.T., 7-15-65	7.8 γ/mm		12683 γ
	0000 U.T., 7-16-65	2400 U.T., 7-31-65	"		12694 γ
Z	0000 U.T., 7-1-65	2400 U.T., 7-31-65	7.6 γ/mm		55166 γ

STORM MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE		CALIBRATION BASELINE
D	0000 U.T., 7-1-65	2400 U.T., 7-24-65	7.9'/mm	29.5 γ/mm	23° 44.5' E
	0000 U.T., 7-25-65	2400 U.T., 7-31-65	"	"	23° 42.9' E
H	0000 U.T., 7-1-65	2400 U.T., 7-15-65	43.9 γ/mm		10716 γ
	0000 U.T., 7-16-65	2400 U.T., 7-31-65	"		10734 γ
Z	0000 U.T., 7-1-65	2400 U.T., 7-31-65	48.4 γ/mm		54113 γ

RAPID RUN MAGNETOGRAPH

COMPONENT	PERIOD FROM	PERIOD TO	CALIBRATION SCALE VALUE	
D				
H				
Z				

MONTHLY MEAN ABSOLUTE VALUES*

D	H	Z
27° 38.0' E	12900 γ	55340 γ

* COMPUTED FROM TEN QUIETEST DAYS DURING MONTH.

DAYS USED: JUL 2, 3, 9, 10, 11, 16, 19, 21, 22, 29

Form CGS-484a

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
Denver, CO 80225

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of min. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (120W M.T.) is hour 08 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	85	JUL	D

C	Q or S	Tem Q	Hr. Da.	01	02	03	04	05	06	07	08	09	10	11	12
			01	116	139	185	96	132	173	180	368	183	175	173	158
			02	152	149	157	172	193	209	220	213	211	207	203	210
			03	154	129	130	179	199	217	207	207	205	203	197	183
			04	124	102	114	112	86	95	84	80	115	187	202	157
			05	124	98	81	86	84	63	143	153	154	284	214	157
			06	157	120	131	159	156	142	291	308	161	216	353	181
			07	239	100	168	130	96	198	179	82	256	186	174	213
			08	172	172	159	137	154	147	239	167	170	174	261	184
			09	129	140	131	79	196	110	168	222	174	177	183	180
			10	160	146	158	183	178	194	198	196	194	196	176	184
			11	127	103	106	168	173	191	169	198	225	146	138	208
			12	94	92	26	5	-16	28	98	11	11*	67	344*	170*
			13	162	159	160	158	172	168	176	177	167	192	132	336*
			14	101	115	116	190	287	160	86	90	11*	182	210*	153
			15	177	184	180	181	144	257	200	184	172	123	171	196
			16	163	172	180	190	210	210	195	190	185	176	192	197
			17	153	149	157	134	188	179	171	183	166	185	480*	249*
			18	149	137	133	112	178	164	160	182	166	154	193	188
			19	167	157	143	163	167	180	196	238	194	159	286	250
			20	163	156	156	150	172	154	166	185	188	185	266	218
			21	156	138	114	126	148	154	192	188	228	260	214	182
			22	178	170	155	153	157	175	180	171	236	199	193	234
			23	139	143	140	98	62	201	124	113	170	151	152	306
			24	160	141	127	136	155	149	213	248	199	175	190	283*
			25	109	102	72	99	152	134	140	167	158	163	116	194
			26	130	137	143	143	94	241	169	182	191	221	292	222
			27	147	138	90	143	133	143	118	188*	134	195	387	245
			28	150	120	110	137	172	156	180	188	159	168	90	156
			29	141	150	161	175	183	189	188	196	190	187	187	200
			30	139	165	164	164	101	138	162	183	172	167	148	307
			31	107	126	154	154	174	151	236	170	29*	268*	21*	83

Hr. Da.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
01	176	224	251	245	287	360	356	316	250	177	161	152	5033
02	216	232	249	273	287	317	307	292	267	242	214	177	5369
03	208	239	255	292	315	329	332	307	278	256	194	215	5430
04	727*	306*	230	343	473*	425*	330	350	280	167	106	127	5322
05	176	160	96	257	330	286	331	317	216	185	162	182	4339
06	205	247	286	244	259	285	293	278	281	245	199	270	5467
07	188	219	324	258	277	283	303	304	312	247	223	183	5142
08	188	228	255	214	273	350	327	251	224	171	135	120	4872
09	183	206	238	285	287	317	316	312	265	188	192	181	4859
10	186	218	248	272	312	331	322	326	259	229	181	154	5201
11	210	261	290	302	349	363	358	290	228	190	182	134	5109
12	233*	170*	369*	488*	344*	344*	416*	591*	85	188	198	180	4536
13	310	377*	241*	432*	535*	385	407	180	187	144	162	134	5653
14	194	173	268	290	334	337	304	275	243	221	197	193	4730
15	197	257	291	301	320	302	279	263	242	204	181	153	5159
16	198	210	248	288	337	326	294	260	239	224	183	179	5246
17	266*	165*	464*	488*	349	350	312	266	217	192	181	169	5813
18	114*	159	244	306	318	323	288	259	233	156	130	139	4585
19	273	269	282	237	307	290	281	278	256	219	189	166	5347
20	214	222	310	418	390	323	301	287	252	231	200	183	5490
21	207	213	250	266	281	283	288	283	269	248	203	187	5078
22	205	207	260	296	296	280	277	274	280	241	215	163	5195
23	255	271	288	267	284	302	289	288	250	232	212	168	4905
24	322	374	352	328	277	276	277	282	208	234	173	124	5403
25	198	229	254	289	298	275	278	239	200	164	157	129	4316
26	207	229	239	278	277	290	309	311	304	238	166	116	5129
27	277	198	181	252	270	283	302	270	240	214	183	170	4901
28	188	190	218	237	272	298	328	303	172	150	147	145	4434
29	187	204	235	277	310	316	327	285	246	166	128	133	4961
30	195	217	387*	264*	312	340	324	278	234	183	146	126	5016
31	387*	300*	483*	594*	339*	324	446	342	184	185	172	94	5523

SCALED BY	LYT, PAF
CHECKED BY	JEP, PAF, LYT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated

[ ] Significant portion of hour interpolated.

☐ No record; or no values available because of faulty record.

[ ] Scaling uncertain because of magnetic storm.

<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

* Derived from STORM Mgph., converted to Normal Mgph.

MONTHLY SUM	157,563
MONTHLY MEAN	212
DATES WITH GAPS:	

Form C&GS-484c

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
DENVER, CO 80225

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of mm. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (120W M.T.) is hour 08 of the 8486 universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSV.	YEAR	MONTH	ELEMENT
CO	85	JUL	Z

C	Q or S	Tens Q	Hr. Day	01	02	03	04	05	06	07	08	09	10	11	12
			01	227	311	326	248	300	271	252	158	225	239	225	213
			02	236	244	241	240	249	248	247	237	233	227	227	232
			03	219	227	240	249	244	243	235	230	228	227	226	217
			04	240	258	277	271	239	253	220	255	256	277	246	233
			05	232	250	264	274	284	285	305	265	207	194	17	172
			06	267	256	268	293	291	275	282	220	227	193	65	47
			07	333	275	268	292	294	206*	277	152	142	253	208	230
			08	240	247	233	233	267	272	300	281	261	246	228	176
			09	226	246	263	254	314*	272	266	200	257	247	240	234
			10	233	229	250	264	243	243	240	242	246	229	223	208
			11	212	223	257	287	256	266	266	293	267	223	218	231
			12	238	258	268	90*	185*	160*	185*	39*	66*	311	350*	388*
			13	228	236	242	237	239	236	241	252	243	190	216	300*
			14	299	282	314	300	249*	224*	160*	242*	276	304	401*	205
			15	248	253	258	276	280*	286	298	272	245	217	57	176
			16	243	248	257	266	260	253	261	273	263	256	239	230
			17	233	249	258	259	344	309	303	299	266	273	147*	26*
			18	277	307	275	289	276	279	294	281	233	219	227	274
			19	240	257	277	270	254	267	284	264	251	243	212	-48
			20	233	245	247	263	276	290	251	279	262	248	220	166
			21	243	246	253	290	303	297	313	293	244	193	228	227
			22	224	226	227	233	239	247	249	253	263	228	243	175
			23	213	217	213	204	244	284	256	191	224	224	217	224
			24	224	221	217	234	227	246	296	247	267	261	256	294*
			25	252	267	267	277	315	250	261	257	279	221	100	173
			26	228	236	238	236	239	306	292	263	236	192	136	134
			27	287	276	241	296	299	309	237	90*	256	228	115	97
			28	257	256	258	290	301	298	268	260	247	239	225	154
			29	233	241	249	242	233	236	243	253	242	233	229	233
			30	238	238	236	250	270	317	346	258	237	236	222	193
			31	228	232	221	223	238	250	275	85*	174*	54*	172	219

Hr. Day	13	14	15	16	17	18	19	20	21	22	23	24	SUM
01	198	168	179	156	192	227	210	198	193	193	212	226	5347
02	228	227	233	233	233	233	223	217	213	203	217	223	5544
03	120	163	203	217	227	228	223	213	202	206	204	214	5205
04	338*	-93*	78	76	199*	224*	115	174	229	204	235	222	5026
05	227	248	96	155	169	227	237	227	197	207	217	228	5184
06	68	74	162	143	204	201	200	197	198	241	245	286	4903
07	197	221	209	154	163	227	252	243	232	217	232	237	5514
08	203	190	104	133	227	197	126	143	172	193	224	241	5137
09	233	234	203	208	192	214	210	214	213	210	227	238	5520
10	207	221	220	220	233	230	227	223	213	216	204	209	5473
11	185	194	162	158	206	217	215	196	197	202	219	230	5380
12	490*	553*	433*	573*	509*	477*	459*	388*	-4	165	206	219	7006
13	241	224*	376*	229*	242*	78	66	107	193	210	245	271	5342
14	154	230	278	259	263	221	236	238	227	225	229	238	6049
15	213	231	196	242	242	237	233	232	231	227	236	240	5626
16	243	247	236	233	207	210	223	223	226	223	220	227	5767
17	185*	236	414*	153*	37	193	200	207	217	223	247	249	5527
18	255	170	160	207	233	203	221	227	232	230	242	227	5838
19	68	266	135	157	211	230	233	228	231	232	237	233	5232
20	191	214	216	214	28	109	188	220	223	223	231	237	5274
21	230	243	248	247	247	238	233	220	213	223	221	224	5917
22	121	187	230	230	223	223	225	223	214	194	197	198	5272
23	200	159	209	191	171	180	182	210	216	206	204	210	5049
24	117	149	88	104	207	223	229	227	207	219	200	213	5173
25	210	227	236	230	217	196	163	171	180	192	202	210	5353
26	195	180	190	197	168	199	220	221	219	233	237	241	5236
27	234	241	142	225	231	239	235	228	229	225	230	240	5433
28	175	205	222	225	230	245	233	220	196	201	232	227	5664
29	208	200	197	207	207	213	231	218	220	207	216	230	5421
30	150	185	9*	153	239	243	237	230	229	227	226	227	5336
31	384*	409*	820*	612*	320*	95	139	123	140	214	300	286	6213

SCALED BY	LYT, PAF
CHECKED BY	JEP, PAF, LYT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
☐ No record; or no values available because of faulty record.
[ ] Scaling uncertain because of magnetic storm.
< > Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.
* Derived from STORM Mgph., converted to Normal Mgph.

MONTHLY SUM	169,961
MONTHLY MEAN	228
DATES WITH GAPS:	

Form CAGS-484a

U.S. DEPARTMENT OF INTERIOR
Geological Survey, Geologic Division
Denver Federal Center
Denver, CO 80225

MAGNETOGRAM HOURLY SCALINGS
(UNIVERSAL TIME)

Values are in tenths of gam. and are averages for successive periods of one hour beginning at midnight. Hour 01 of local day (120W M.T.) is hour 08 of the same universal day.
Shrinkage corrections have been applied. Negative values are in red, with minus signs shown.

OBSY.	YEAR	MONTH	ELEMENT
CO	85	JUL	H

C	Q or S	Two Q	Day \ Hr.	01	02	03	04	05	06	07	08	09	10	11	12	Day \ Hr.	13	14	15	16	17	18	19	20	21	22	23	24	SUM
			01	352	428	360	361	340	272	370	262	330	300	279	279	01	172	198	195	166	240	242	245	255	244	230	241	243	6604
			02	264	259	287	288	279	280	274	271	273	279	289	285	02	290	295	296	293	282	269	251	249	237	232	246	248	6516
			03	268	287	300	287	298	283	283	280	283	289	297	294	03	191	277	287	296	303	287	268	252	253	250	262	320	6695
			04	269	363	358	294	303	306	318	353	400	371	321	272	04	-383*	-299*	234	78	-26	0	222	206	202	237	240	329	4968
			05	316	314	356	388	382	494	435	458	380	230	94	191	05	202	-166	66	239	254	332	268	247	246	220	243	268	6457
			06	327	322	414	394	333	330	394	319	364	277	-118*	36	06	60	151	130	236	303	214	260	274	263	272	280	314	6149
			07	440	418	524	354	417	417*	375	185	262	340	201	62	07	274	249	-45*	0*	293	320	300	260	249	242	257	252	6646
			08	259	293	269	319	342	376	368	295	290	295	305	273	08	217	196	27	211	276	191	80	218	241	226	263	279	6109
			09	270	284	358	488	481*	464	377	274	288	270	273	271	09	272	258	204	228	216	256	270	256	241	235	246	250	7030
			10	250	290	300	288	279	283	287	300	297	290	288	263	10	247	267	276	299	290	308	286	265	249	232	249	269	6652
			11	279	292	297	340	307	285	340	338	312	323	336	314	11	-256	276	177	276	307	303	282	260	270	270	264	254	6958
			12	292	328	451	826*	617*	706*	550*	374*	421*	49*	-537*	-106	12	-44	-283*	-373*	-521*	-391*	-446*	-142*	-413*	268	322	292	272	2512
			13	288	292	292	284	280	298	313	305	344	274	190	-114*	13	19	80	-95	-185	-132*	-7	-109*	264	236	230	211	307	3865
			14	285	344	363	480	583*	617*	499*	-36*	88*	44	-86	68	14	181	254	208	266	245	237	267	268	256	254	297	243	6175
			15	260	272	303	340	494*	416	270	299	341	253	-137*	238	15	226	238	258	306	298	281	267	263	253	248	245	252	6484
			16	266	261	270	252	269	283	302	282	278	280	267	279	16	295	292	283	256	270	287	281	268	243	255	250	266	6535
			17	297	245	300	330	429	320	280	280	295	296	-171*	-345*	17	-76*	142	-340*	-92*	236	308	305	283	272	276	266	278	4414
			18	297	342	319	356	313	318	351	327	326	282	292	157	18	-286*	74	234	265	268	240	296	253	219	197	250	268	5958
			19	288	300	283	260	294	258	317	298	293	293	144	64	19	113	-18	26	234	286	290	273	270	260	263	250	253	5592
			20	261	269	277	310	301	330	364	280	268	275	245	232	20	280	258	126	-149*	-36*	279	300	275	251	239	240	239	5714
			21	252	260	303	298	309	333	320	330	334	211	275	269	21	274	283	278	270	260	261	256	250	262	255	251	247	6641
			22	249	249	259	267	273	284	292	313	353	309	300	186	22	189	279	284	291	288	291	280	270	253	251	254	263	6527
			23	265	270	274	352	455	460	367	457	392	379	274	313	23	209	195	255	213	225	220	233	237	242	247	253	252	7139
			24	273	270	272	255	279	314	392	382	361	307	305	37*	24	-87*	-5	122	268	300	283	259	232	230	233	248	262	5792
			25	309	310	346	380	347	326	435	366	356	300	180	252	25	280	283	280	272	250	244	196	234	240	236	239	243	6904
			26	254	255	269	293	368	490	322	285	287	240	156	228	26	203	183	236	231	245	266	264	248	194	180	208	263	6168
			27	328	296	330	421	313	416	458	386*	292	299	126	9*	27	120	-103	268	292	299	273	240	243	232	238	248	260	6284
			28	276	301	310	347	312	280	282	291	295	268	25	172	28	259	258	243	257	278	262	233	193	180	220	223	242	6007
			29	269	263	267	265	260	279	279	279	265	272	269	272	29	268	259	246	256	247	260	235	219	203	210	217	233	6092
			30	252	262	297	299	366	447	317	255	260	279	296	246	30	190	-209*	-192*	320	320	283	267	247	232	239	240	256	5769
			31	267	253	267	303	276	312	393	376*	208*	-626*	-12*	257	31	-159*	-94	-496*	-699*	-378*	304	234	220	207	287	260	293	2253

SCALED BY	LYT, PAF
CHECKED BY	JEP, PAF, LYT
SIGNS REVIEWED BY	JEP
PUNCHED BY	

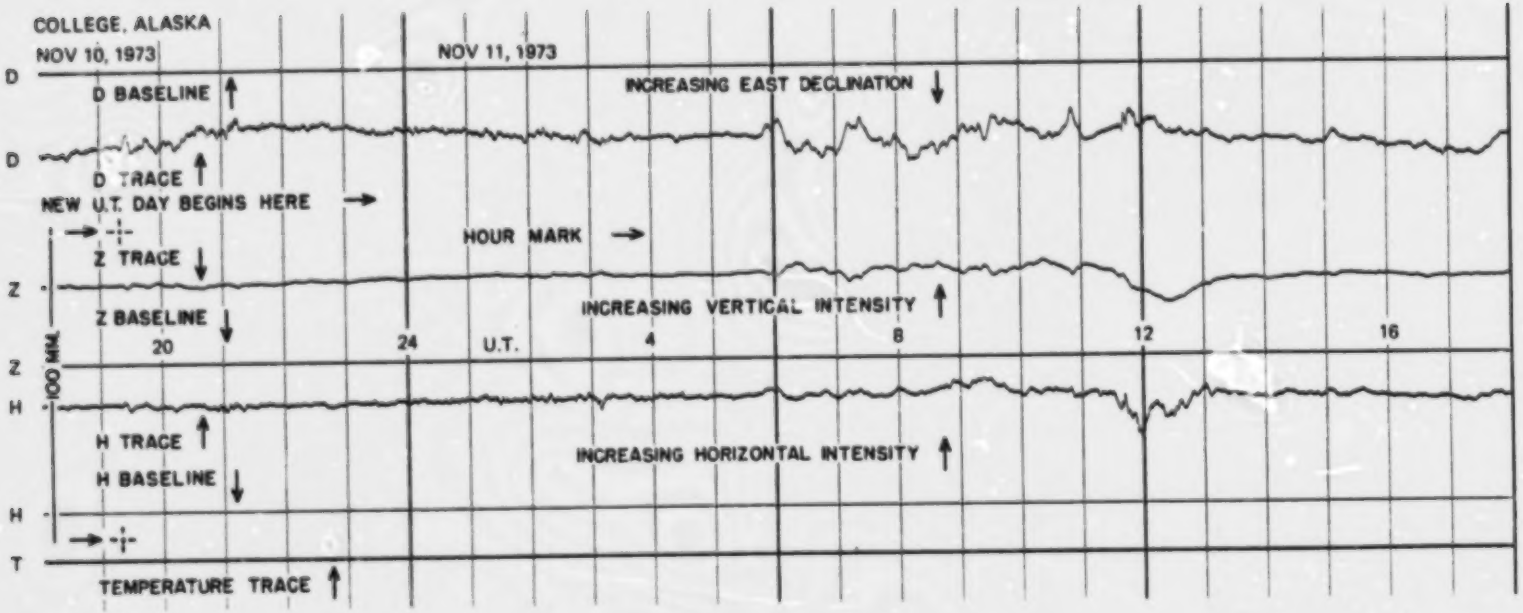
Preliminary base-line and scale values:

Interval Beginning	Base-line Value	Scale Value

( ) Interpolated
[ ] Significant portion of hour interpolated.
☐ No record; or no values available because of faulty record.
* Derived from STORM Mgph., converted to Normal Mgph.
[ ] Scaling uncertain because of magnetic storm.
<> Record off sheet for part or all of hour; if value is given, curve was estimated for missing part.

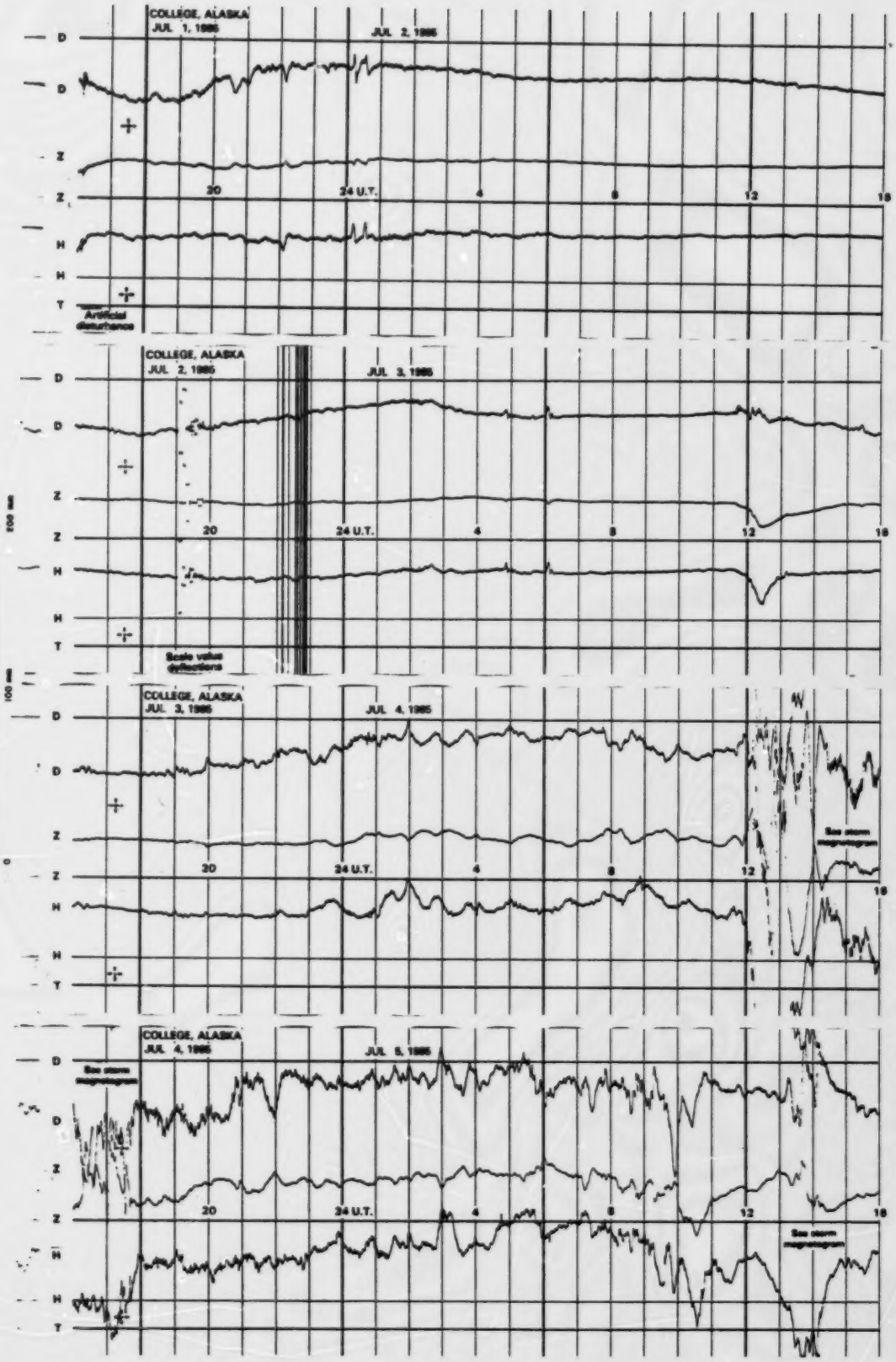
MONTHLY SUM	189609
MONTHLY MEAN	247
DATES WITH GAPS:	

FORMAT FOR NORMAL & STORM MAGNETOGRAMS
(SAMPLE ONLY)

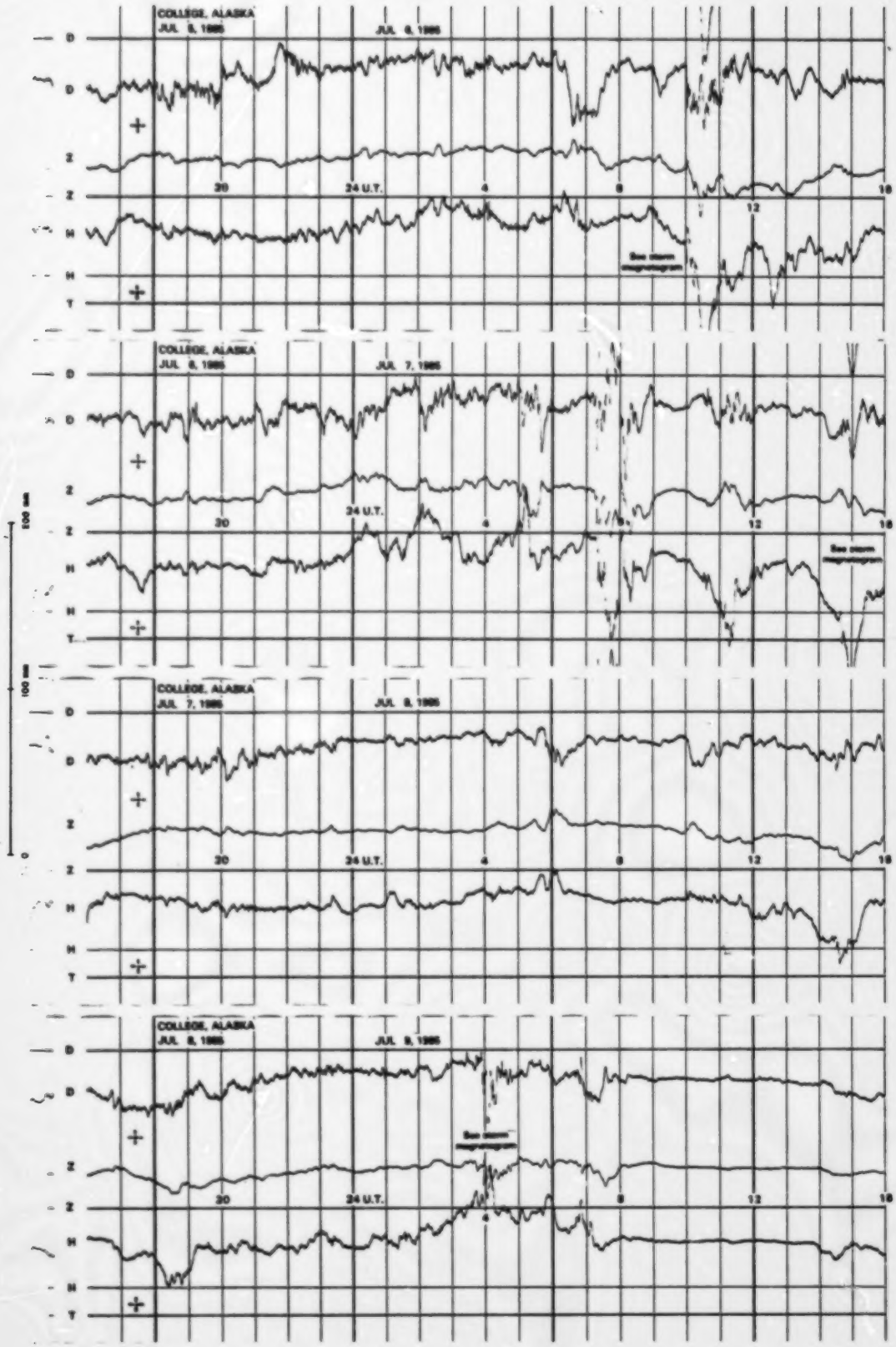


SEE PRELIMINARY CALIBRATION DATA FOR SCALE VALUES & BASELINE VALUES

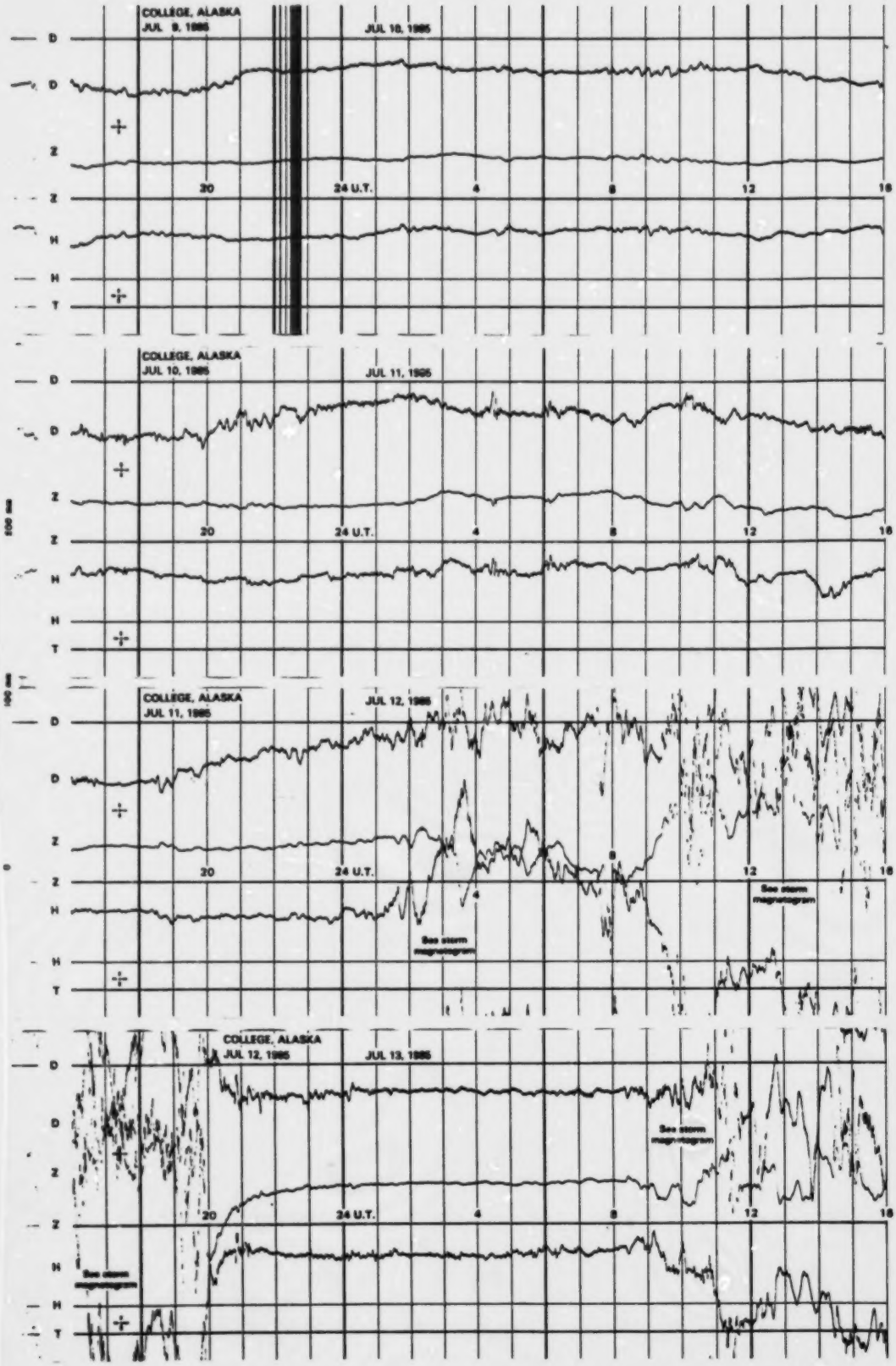
NORMAL MAGNETOGRAMS



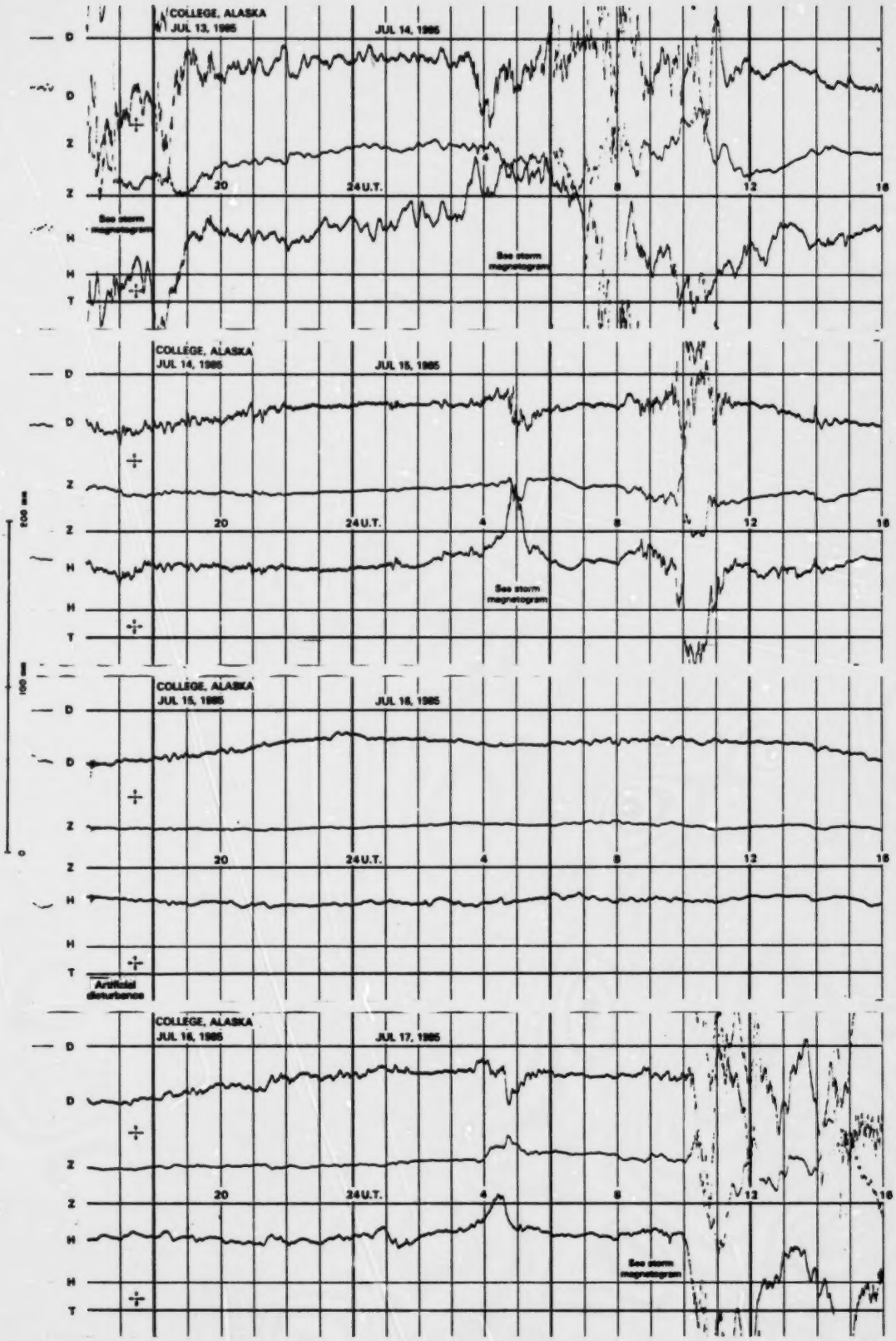
NORMAL MAGNETOGRAMS



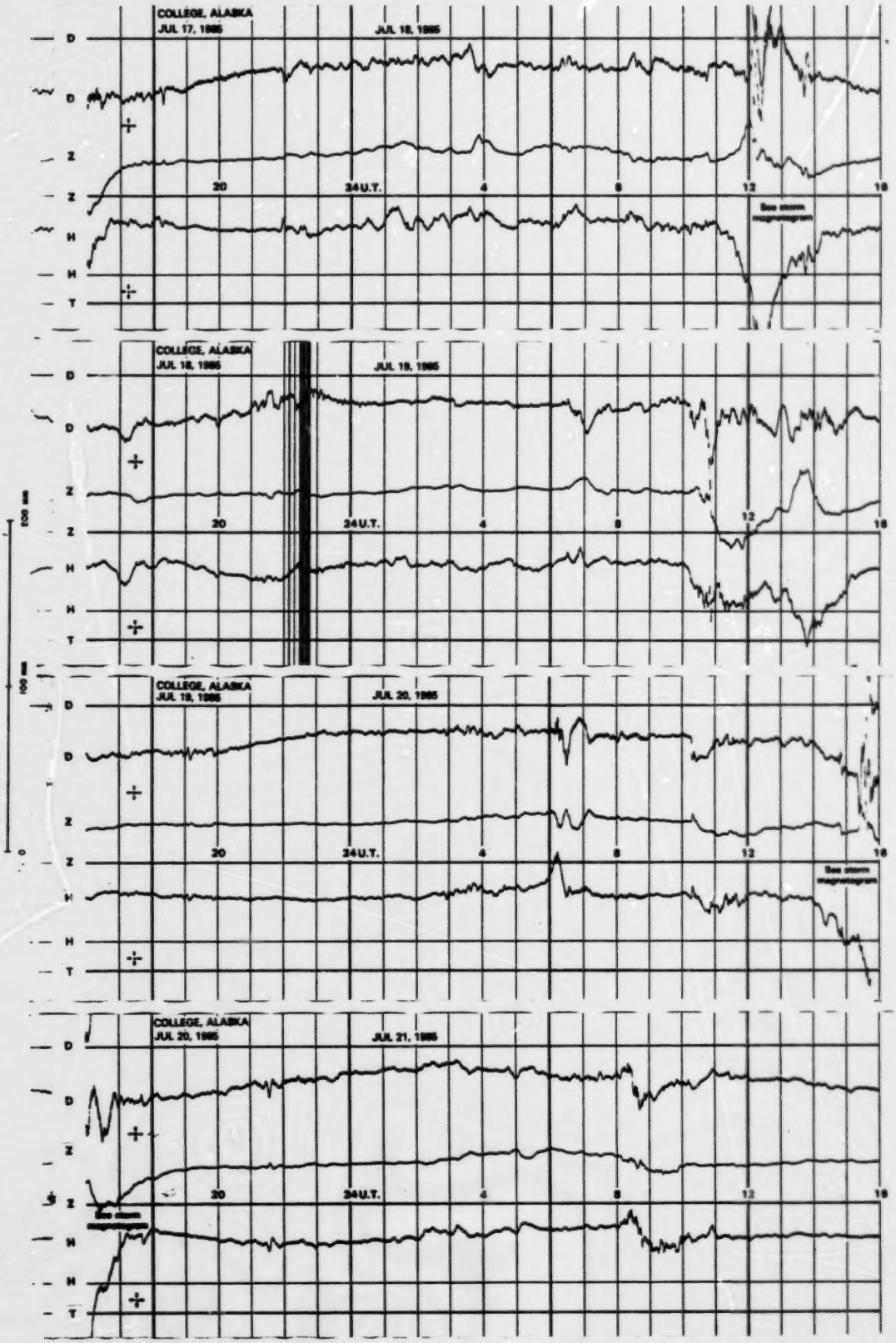
NORMAL MAGNETOGRAMS



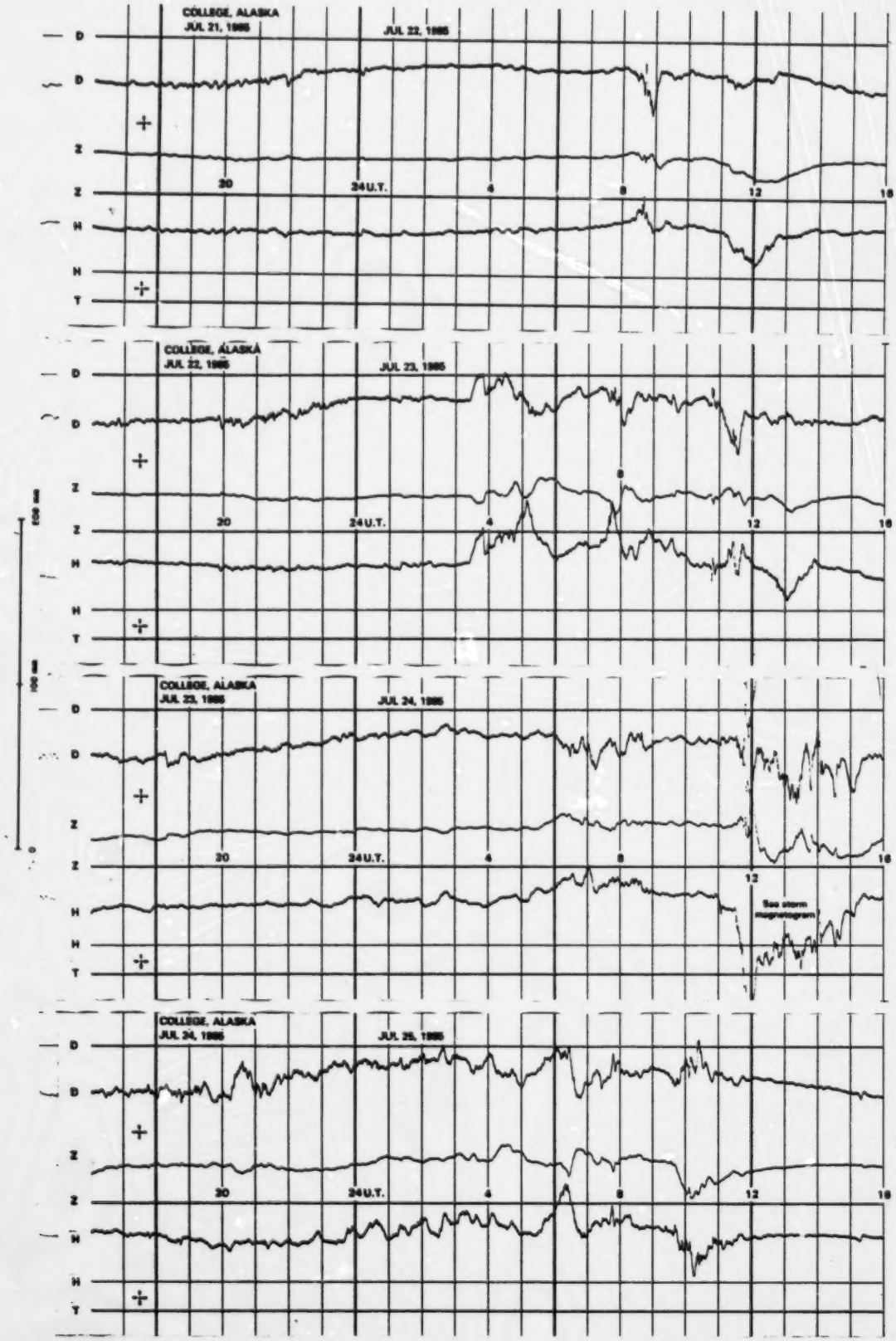
NORMAL MAGNETOGRAMS



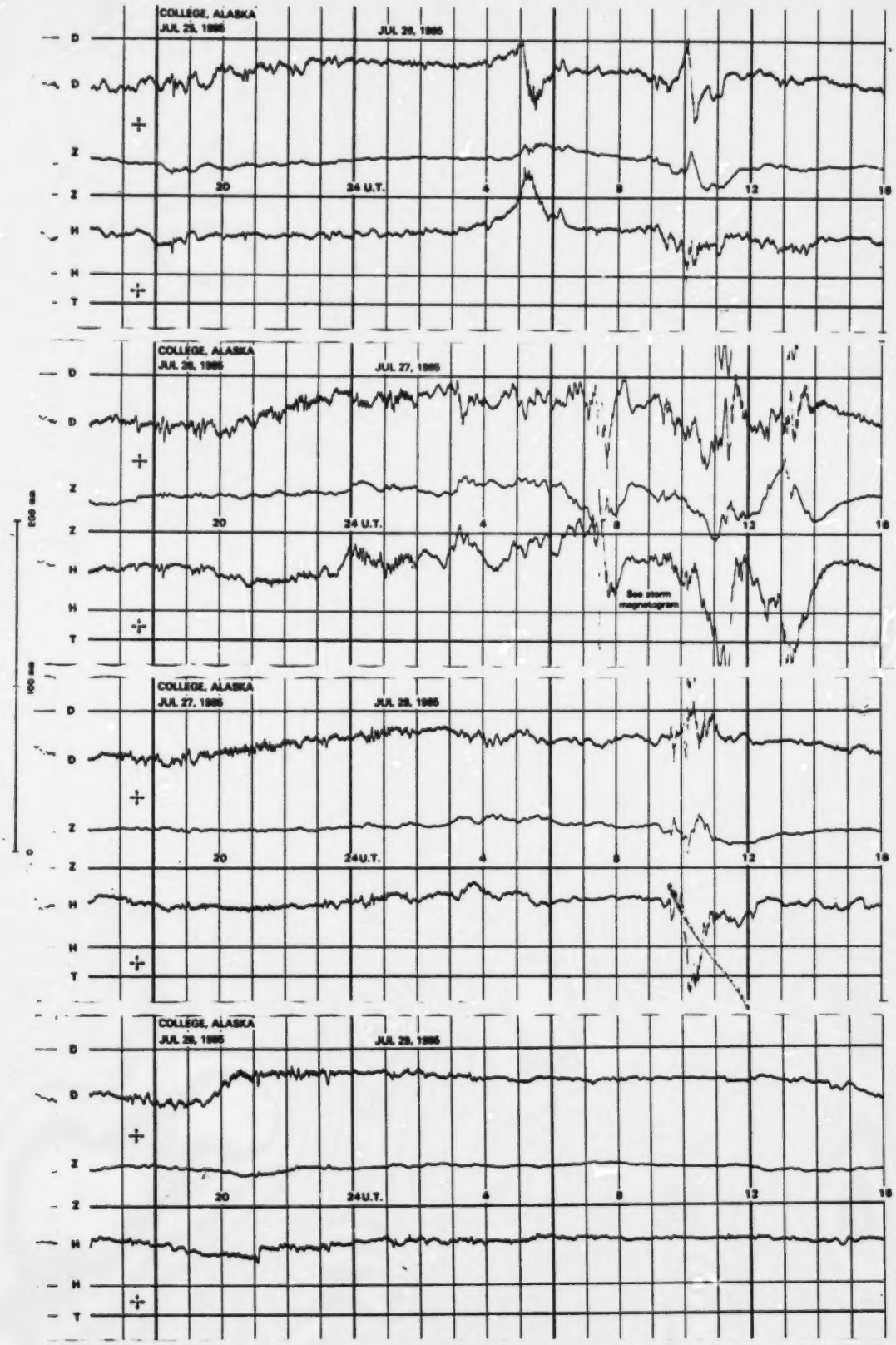
NORMAL MAGNETOGRAMS



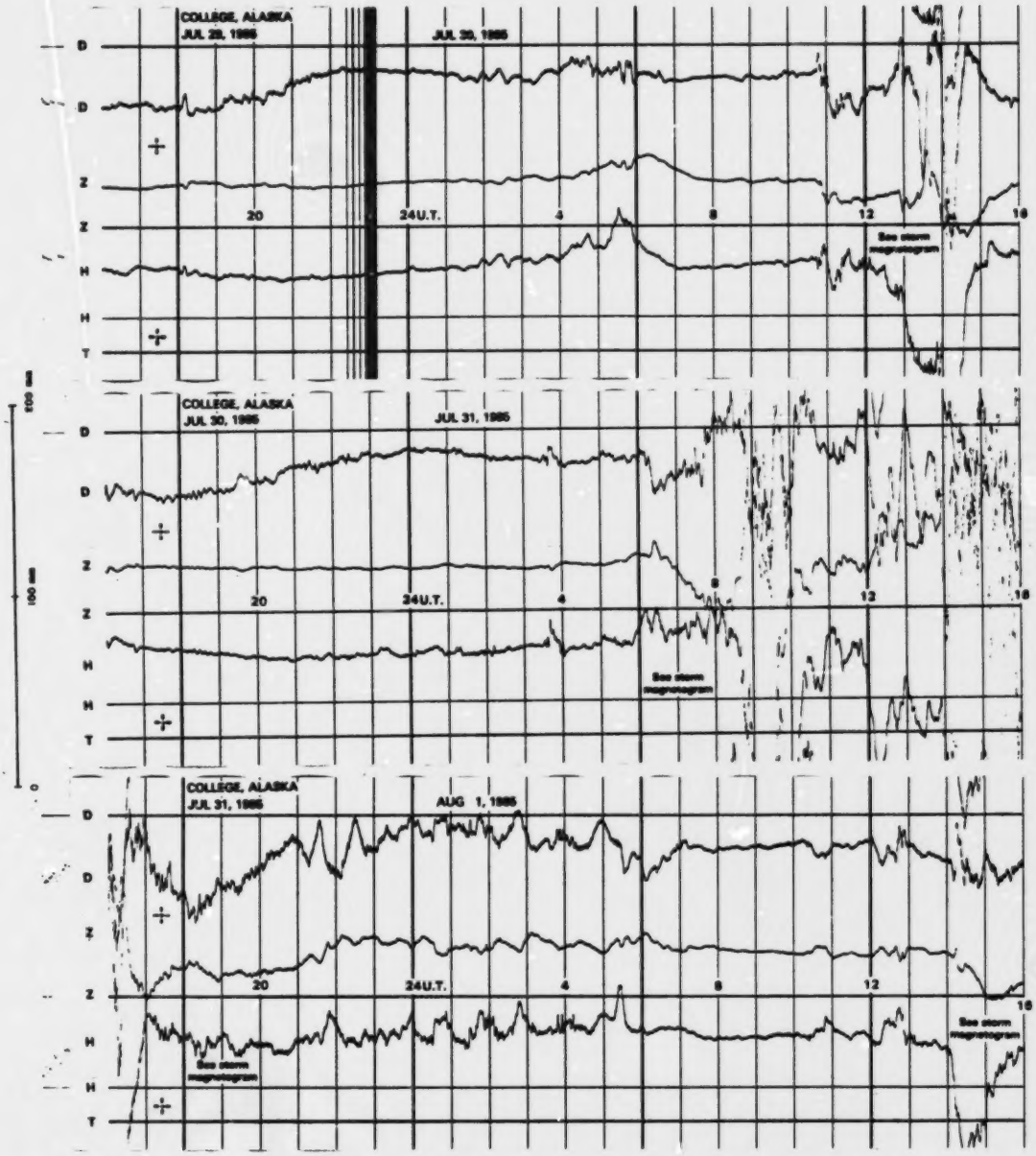
NORMAL MAGNETOGRAMS



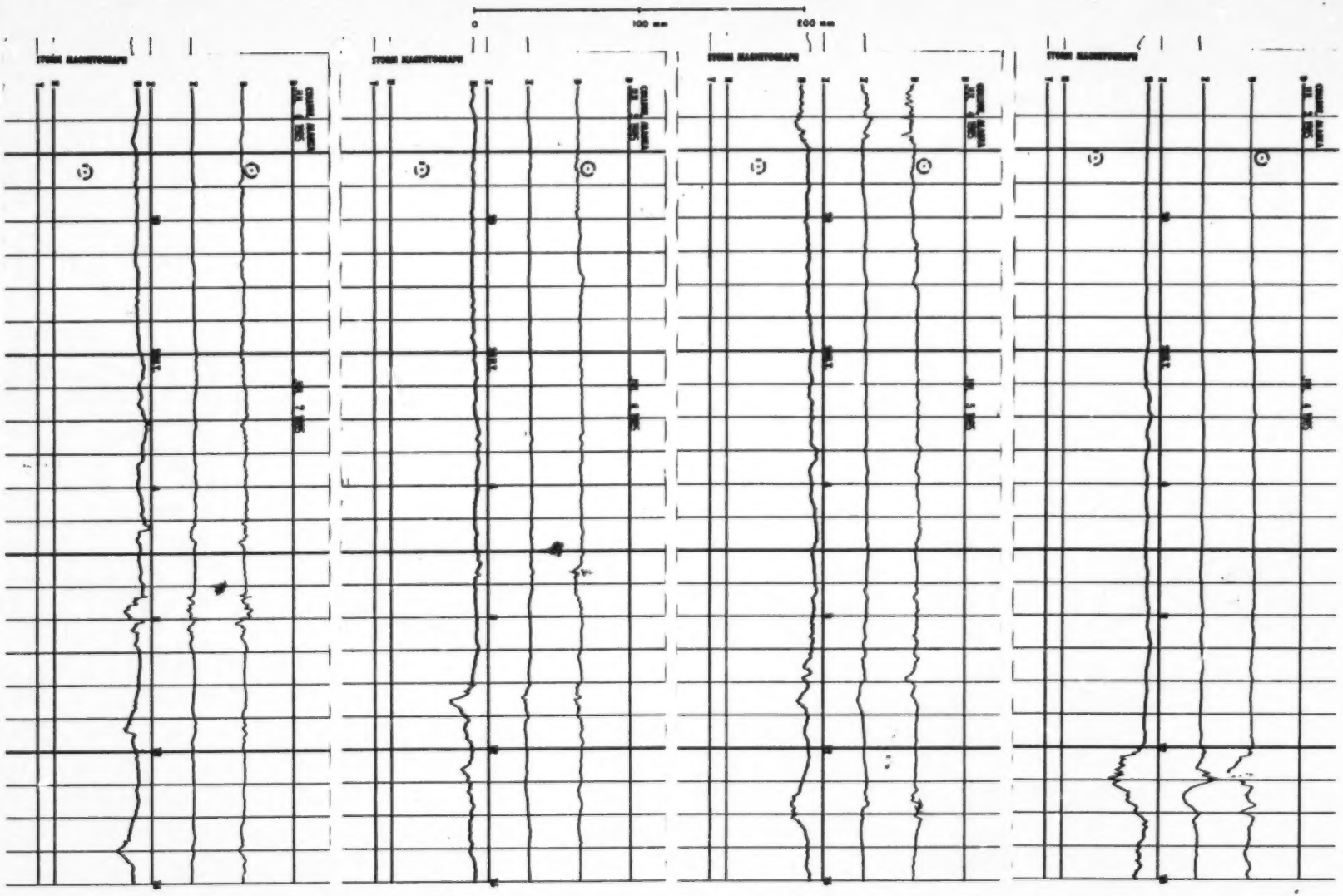
NORMAL MAGNETOGRAMS



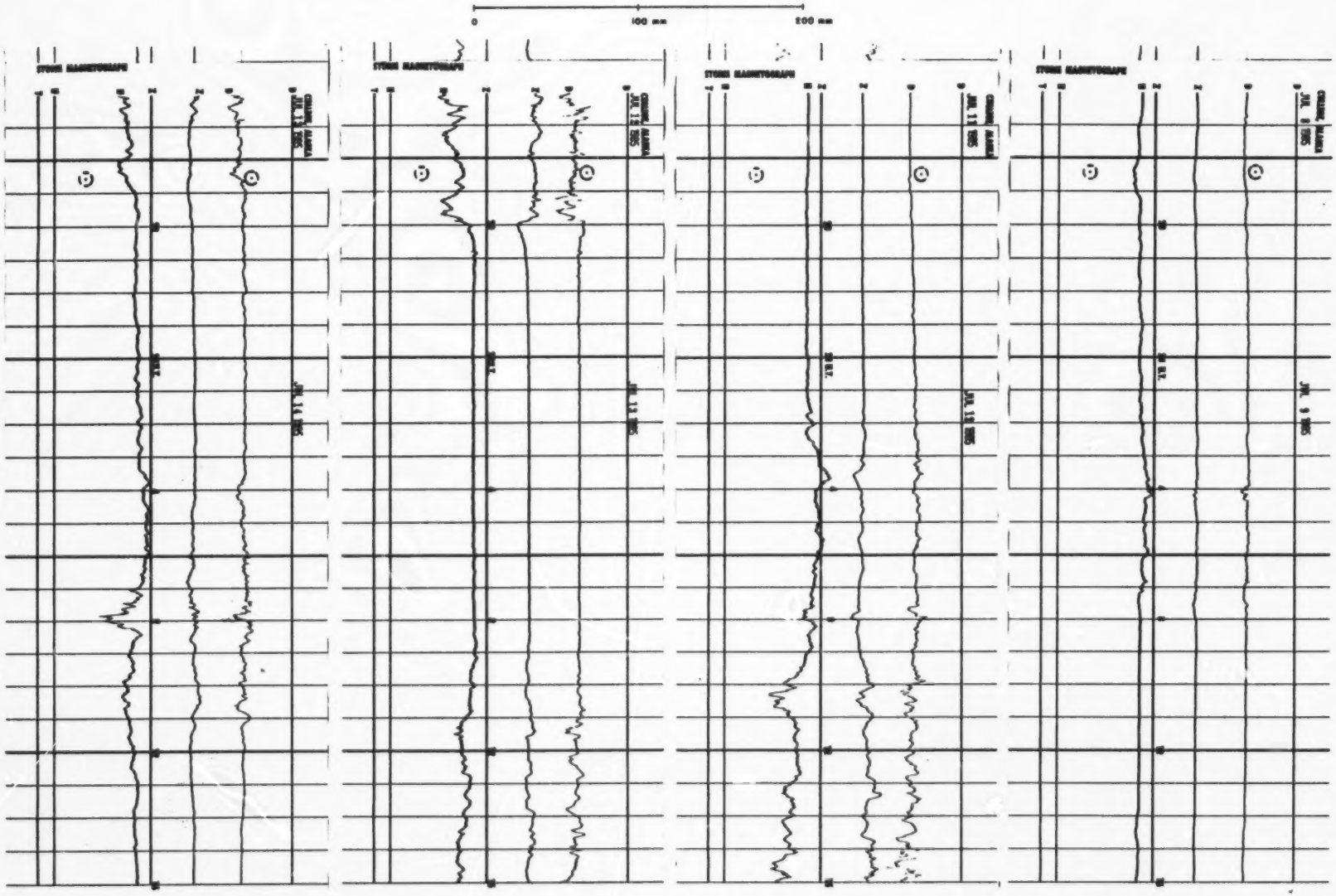
NORMAL MAGNETOGRAMS



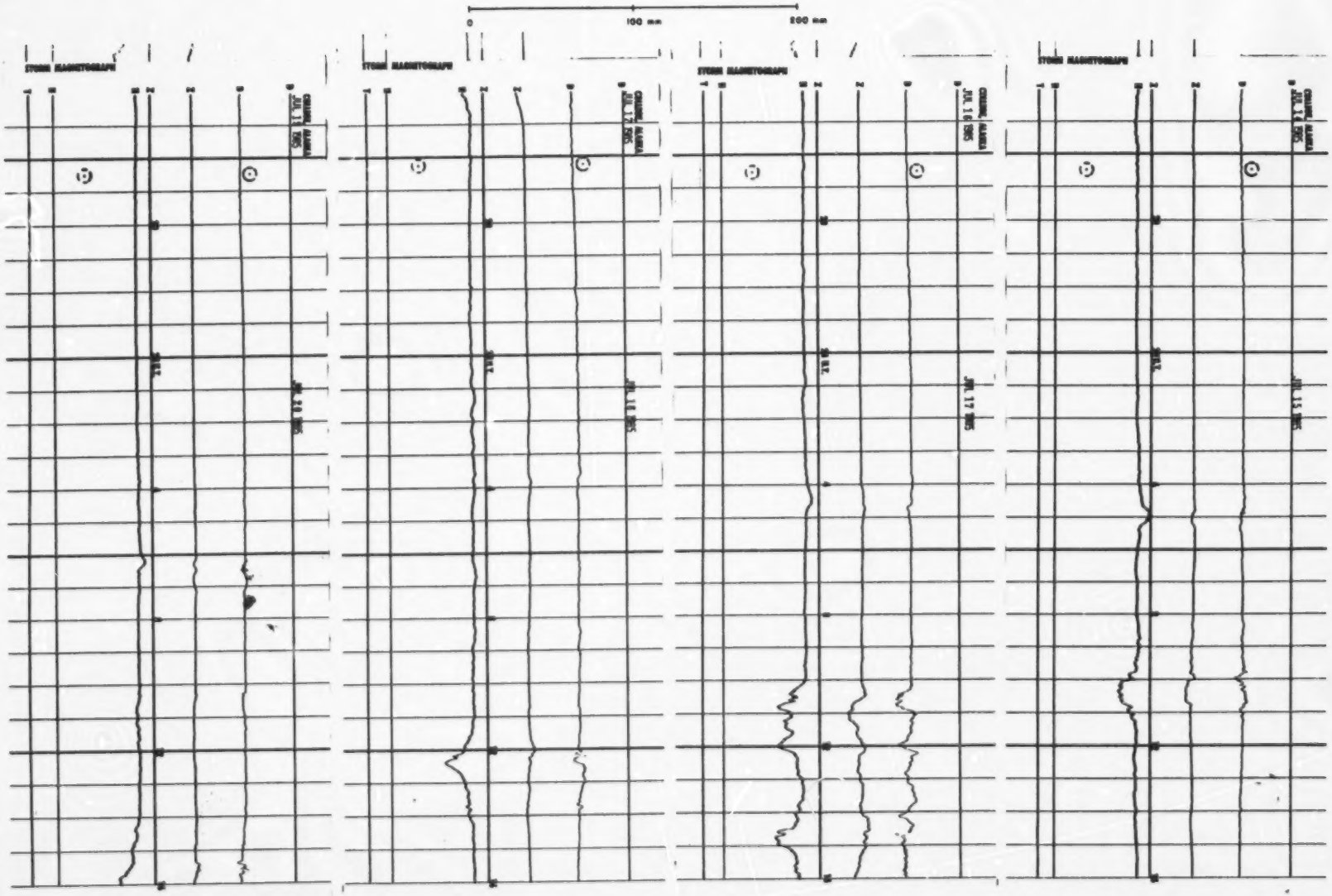
STORM MAGNETOGRAMS



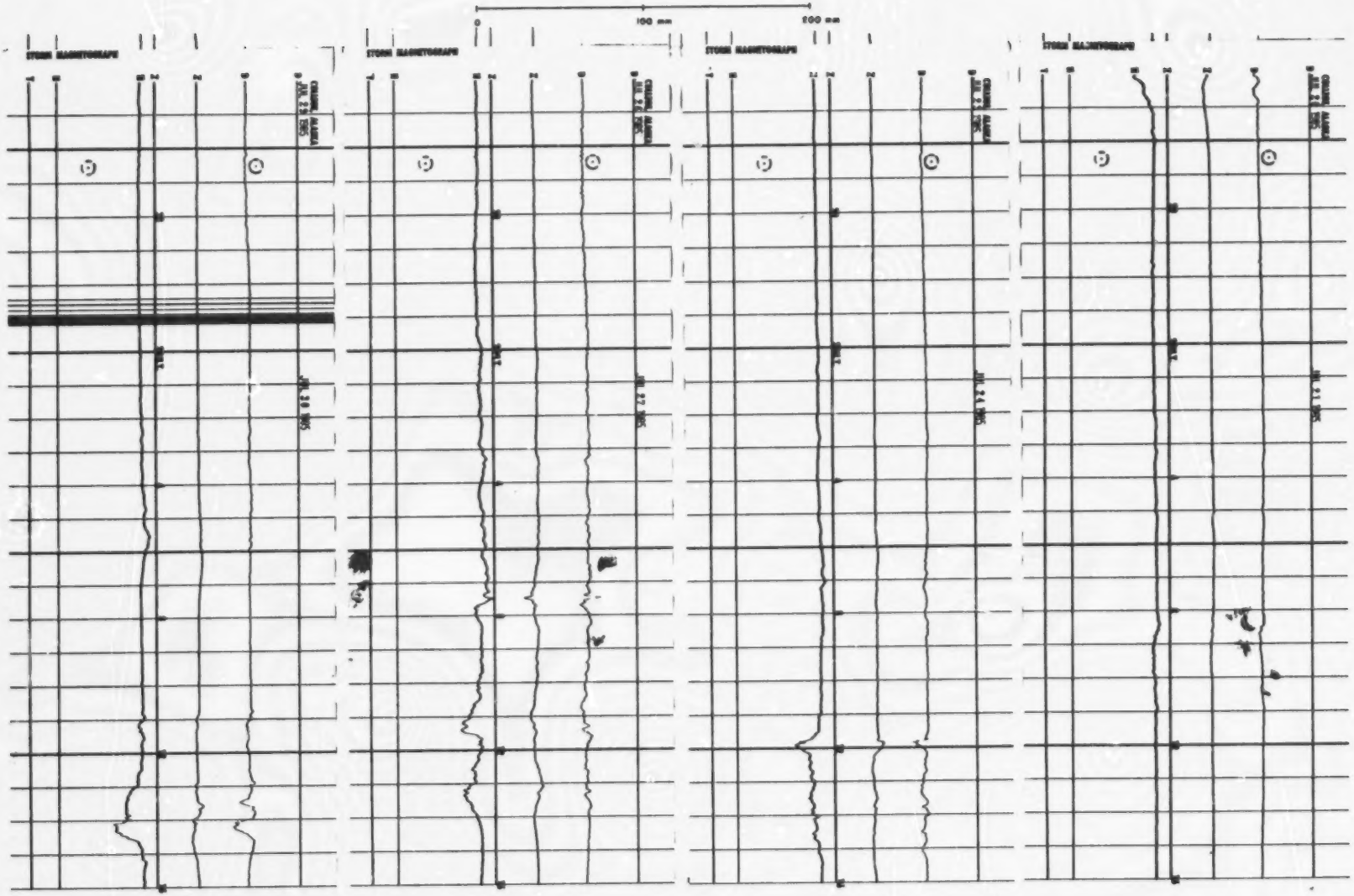
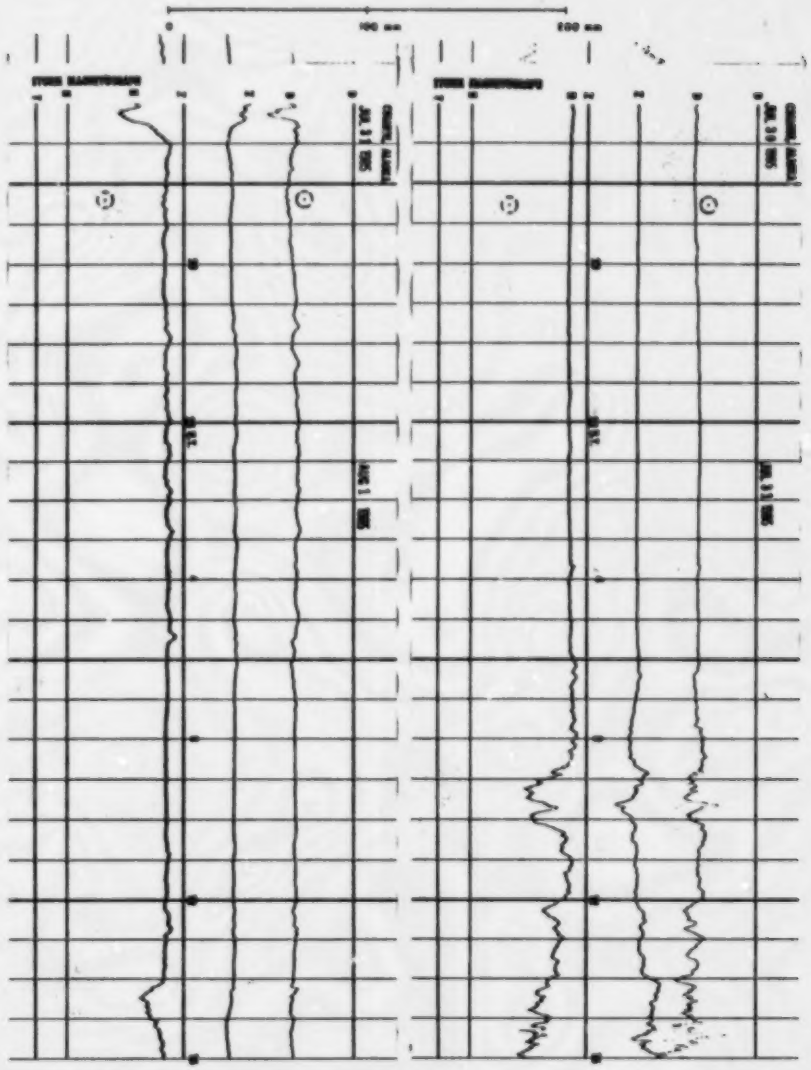
STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS



STORM MAGNETOGRAMS